UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Interconnection, L.L.C.	)	Docket Nos. ER09-1063-004

ANSWER AND MOTION FOR LEAVE TO ANSWER OF THE INDEPENDENT MARKET MONITOR FOR PJM

Pursuant to Rules 212 and 213 of the Commission's Rules and Regulations, 18 CFR §§ 385.212 & 385.213 (2010), Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor for PJM ("Market Monitor" or "MMU"),[1] answers and moves for leave to answer the comments of certain intervenors filed on July 30, 2010,[2] to the compliance proposals submitted, respectively, by PJM Interconnection, L.L.C. ("PJM") on June 18, 2010 ("June 18th Proposal") and by the Independent Market Monitor for PJM on July 19, 2010 ("Amended Proposal"). The Market Monitor is concerned that a number of comments reveal continuing confusion about the nature of the objectives appropriate to this

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1 PJM Interconnection, L.L.C. is a FERC-approved Regional Transmission Organization. Capitalized terms used herein and not otherwise defined have the meaning provide in the PJM Open Access Transmission Tariff or the PJM Operating Agreement.

2 Comments addressed in this pleading include those of The Power Providers ("Power Providers"), including an Affidavit of Roy J. Shanker, Ph.D ("Shanker Affidavit"); the PSEG Companies, including Public Service and Gas Company, PSEG Power LLC and PSEG Energy Resources & Trade LLC ("PSEG"), which also cites to the Shanker Affidavit; the Illinois Commerce Commission ("ICC"); the PPL Parties, including PPL Electric Utilities Corporation, PPL EnergyPlus, LLC, Lower Mount Bethel Energy, LLC, PPL Bruner Island, LLC, PPL Holtwood, LLC, PPL Martins Creek, LLC, PPL Montour, LLC, PPL Susquehanna, LLC, and PPL University Park, LLC; American Electric Power Service Corporation ("AEP"); DC Energy, LLC ("DC Energy"); and the Public Utilities Commission of Ohio ("PUCO").

proceeding. PJM does not face a reliability crisis requiring a significant additional transfer of wealth in PJM to supply. PJM affords adequate incentives for demand-side participation and investment in demand-response capability. PJM faces no crisis that warrants the introduction of new and contradictory market rules that raise unnecessary risks of price shocks to PJM consumers. The appropriate objective, with far less potential for unnecessary disruption, is to improve the short term scarcity pricing signals in the markets to encourage more efficient behavior.

This answer does not attempt to address every issue raised by intervenors, as the support already offered by the Market Monitor for its Amended Proposal remains sufficient. This answer reserves comment to a future pleading on one important issue, the inclusion in the June 18th Proposal of assertions related to the role of primary reserves and the need for a new market for primary reserves. PJM filed in this proceeding on August 23, 2010, an answer including additional testimony on this issue. In an effort to preserve an orderly record, the Market Monitor plans to respond to all arguments on this topic together in a single future pleading.

The basic logic of scarcity pricing in a wholesale power market with a well developed capacity market is the organizing principle of this filing. Despite the confusing back and forth on the issues by some parties, that basic logic is straightforward. Scarcity pricing can serve two functions in wholesale power markets: revenue adequacy and price signals. Scarcity pricing for revenue adequacy is not required in PJM. This appears to be a virtually unanimous position, as the Power Providers agrees that no wealth transfer is intended or will result from the implementation of scarcity pricing. The RPM capacity market is designed to provide revenue adequacy and no party has asserted that this proceeding should be used to correct any deficiencies of the RPM design.

Scarcity pricing signals can and do occur both in the energy market and in the capacity market. Customers currently pay scarcity prices in the capacity market, which result in revenue adequacy. Energy prices in excess of current offer caps are not needed in order to implement scarcity pricing currently because the price signal from the energy market together with the price signal from the capacity market correctly indicates the value of consuming on peak or not consuming (demand side) on peak. The all-in price of electricity during peak hours is already well in excess of $1,000 per MWh when the price of capacity is accounted for.

The only necessary purpose of scarcity pricing currently is to address the short run pricing signals during scarcity events to ensure that they are consistent with the real-time operational and reliability needs of the system. This includes the correct, locational price signals to capacity resources and load and also the correct, locational price signals to energy only resources, demand-side resources and imports.

The Amended Proposal does exactly that. The June 18th Proposal attempts to address other, poorly defined issues, which results in an excessively complex proposal with myriad unintended consequences which market participants are still discovering.

I. ANSWER

A. The Commission May Resolve on the Merits Issues Raised on Compliance.

The Power Providers Group (at 27–29) and PPL (at 16) claim that the Market Monitor has somehow overstepped its bounds in submitting amendments to the June 18th Proposal and characterizing them as a "compliance proposal," arguing that the Market Monitor should not be accorded special treatment relative to PJM stakeholders. The Market Monitor does not need, seek or expect any special privileges. Unlike stakeholders, who may

choose to advance and defend their business interests however they define them, the Market Monitor has a duty, which the Commission has emphasized is core to the Market Monitor's mission, to provide its objective views on "actual or potential design flaws in the PJM Market Rules."[3] The PJM tariff specifically charges the Market Monitor to "initiate and propose, through the appropriate stakeholder processes, changes to the design of [PJM Markets]," and specifically directs the Market Monitor, in "support of this function" to "make filings with the Commission on market design issues."[4] This is consistent with the Commission rules, which include among the core functions that the Market Monitor must perform, the evaluation of "existing and proposed rule and tariff changes," and with the Commission's orders in this proceeding, which specifically direct the Market Monitor to provide "its views on any proposed reforms."[5]

The Market Monitor's Amended Proposal is the only comprehensive alternative presented, and it is evident from the pleadings now before the Commission that it enjoys broad stakeholder support.[6] Power Providers and PPL are presumptuous to complain about the Market Monitor's doing the job assigned to it. What is noteworthy about this proceeding is not the Market Monitor's standing but PJM's. PJM should not be accorded the same deference in this proceeding that it might enjoy if it were duly authorized by

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3 OATT Attachment M (PJM Market Monitoring Plan) § IV.B.2.

4 OATT Attachment M (PJM Market Monitoring Plan) § IV.D.

5 18 CFR § 35.28 (g)(3)(ii); *Wholesale Competition in Regions with Organized Electric Markets*, Order No. 719, FERC Stats. & Regs. ¶31,281 at P 235 (2008) ("Order No. 719"), *order on reh'g*, Order No. 719-A, FERC Stats. & Regs. ¶31,292 (2009), *reh'g denied*, Order No. 719-B, 129 FERC ¶ 61,252 (2009).

6 This broad support was also reflected in the stakeholder process, where the Market Monitor's proposal received a sector weighted vote in favor of 2.49/5.0 in the PJM Members Committee, which is comparable to the vote in support of the June 18th Proposal, 2.59/5.0.

stakeholders to file its proposal. The PJM Consumers have made strong arguments that the Commission should simply reject PJM's filing as non-compliant and institute the Amended Proposal.[7] Given the serious defects identified in the June 18th Proposal, this argument is compelling, and it avoids the need for the Commission to engage in any comparison on the merits, only to evaluate whether PJM has established that its proposal meets even the minimum threshold of just and reasonableness or is within the scope of compliance with Order No. 719. The Commission could reject the June 18th Proposal on those grounds and accept the Amended Proposal, which meets the applicable standards, even if PJM had been duly authorized under section 205 to submit its filing.

However, in this proceeding, where PJM lacks stakeholder authorization to submit a filing and has taken this action solely due to the need to comply with a Commission directive, the Commission is not required to accept the June 18th Proposal if it is deemed only minimally acceptable and inferior to an alternative approach. The Commission has an unusual opportunity to determine the issues before it on the basis of merit alone.

The Market Monitor agrees that the scarcity pricing rules in PJM can and should be improved, but it does not agree that any party has shown that the existing rules are deficient in light of Order No. 719's requirements. Indeed, as the Market Monitor explains below, some of the criticism of the current scarcity rules is misleading. Nor has any party

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[7] Protest of PJM Consumers filed in ER09-1063-000, et al. at 47–48 (July 30, 2010). The PJM Consumers include, Allegheny Electric Cooperative, Inc.; American Municipal Power, Inc.; Arcelormittal USA, Inc.; Blue Ridge Power Agency; Borough of Chambersburg, Pa.; Delaware Division of the Public Advocate; Duquesne Light Company; Maryland Office of the Peoples Counsel; New Jersey Division of Rate Counsel; North Carolina Electric Membership Corporation; Office of the Ohio Consumer's Counsel; Old Dominion Electric Cooperative; Pennsylvania Office of Consumer Advocate; PJM Industrial Customer Coalition; Portland Cement Association; Public Power Association of New Jersey; Southern Maryland Electric Cooperative, Inc.

identified the crisis in PJM that justifies a radical and untested remedy. The objective is to achieve better short run pricing signals during scarcity events. This can be achieved without the substantial changes to multiple markets proposed by PJM and without a significant transfer of wealth between load and supply in PJM.

Moreover, because the June 18th Proposal works at cross purposes with PJM's existing market design, the June 18th Proposal specifically contradicts Order No. 719's directives.

B. The June 18th Proposal Risks Unduly High and Disruptive Prices in the Energy Market to Address a Non-Existent Reliability Problem

1. Neither Load Nor Supply Should Confront the Unnecessary Risks Posed Under the $2,700 Effective Price Cap Included in the June 18th Proposal.

The Power Providers (at 24–26) and AEP (at 6) recognize that PJM's proposal to allow prices to exceed the energy price cap by as much as $1,700 introduces market design issues related to the interaction between the Day-Ahead and Real-Time Energy Markets. In particular, the Power Providers and AEP are concerned that the June 18th Proposal to increase prices above offer caps in the real time market can exacerbate market participants' real time price risk relative to their day ahead positions. Rather than address this fundamental flaw in the June 18th Proposal, Power Providers has suggested an ad hoc fix, the addition of "risk premiums."

The source of this issue is PJM's inconsistent and overly complex approach to market design for the implementation of scarcity pricing. Given the significant changes to the PJM markets that are required in order to implement any change to scarcity pricing, a gradual approach is warranted. It is PJM's insistence on incorporating real-time scarcity prices substantially in excess of offer caps that creates the issue that the Power Providers raise. PJM's lack of an identical scarcity pricing mechanism in the Day-Ahead Energy

Market also contributes to the issue. The Power Providers Group however attempts to retain the perceived benefits of high real-time prices with no true up mechanism while complaining about the attendant risks. The risks are part of the June 18th Proposal. The risks identified by the Power Providers Group are not part of the MMU proposal. The risks identified by the Power Providers Group would also not result in the future from the gradual approach recommended by the MMU.

The risk that units will not perform, or that load will be higher than expected, and that both generation and load participants will have to balance their positions in real time is part of PJM's current market design. The issue of balancing risk in the real time markets is not created by the scarcity mechanisms included in the June 18th Proposal. Generation currently faces the risk of real time price exposure due to outages or any shortfall of supply in real time. Load currently faces the risk of real time price exposure due to higher load in real time than day ahead. These risks are appropriately part of PJM's current market design that depends on Day Ahead and Real Time interactions to maximize market efficiency, and the obligations and protections associated with RPM. The real time market functions as a balancing market for deviations from day ahead schedules. PJM's market design depends on incenting participants to schedule and participate in the Day-Ahead Energy Market and to minimize deviations from day ahead obligations. Under the current market design, failure to perform according to one's obligations, both from a capacity market obligation and day ahead commitment perspective, should result in exposure to balancing costs, including deviations, in real time. It is a fundamental and intentional part of the PJM

market design that, as Witness Shanker phrases it, "A unit with a day ahead commitment that fails to perform in real time has to "buy back" its supply in the real-time market."[8]

If scarcity pricing increases prices above offer caps in the Real-Time Energy Market, there will be an inconsistency between the Day-Ahead and Real-Time Energy Market results. This flaw applies only to the June 18th Proposal. The solution is not to create a new "Risk Premium" adder to generators' day ahead energy offers. The solution is to have an internally consistent market design. Such a market design would limit market prices based on identical offer caps in the Real-Time and Day-Ahead Markets.

The Power Providers notes that the proposal to establish scarcity prices of $2,700 in the real-time market increases the value of outage risk. The Power Providers also recognizes that PJM has attempted to mitigate this risk, created by their market design, by allowing the caps on virtual bids to increase to $2,700 per MWh. The Power Providers do not believe that the approach in the June 18th Proposal provides a satisfactory solution because there would be costs associated with effectively moving all generation into the real time market through virtual trading strategies. The Power Providers even recognize that it may not be appropriate to create an incentive that biases all settlements towards real time.[9]

The Power Providers does not appear to recognize that the increased outage risk is an inescapable and appropriate part of increasing real-time prices. The Power Providers does not explicitly admit that generation owners are better off with higher prices and the correspondingly higher risk and that the benefits of the higher prices clearly and

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8 Shanker Affidavit at 29.

9 Shanker Affidavit at 28–29.

overwhelmingly outweigh the costs of the increased risk. If higher prices are the "right incentive" to generation owners to produce, the same higher prices are also the "right incentive" to ensure that units are not on forced outages when they are most needed by the system.

The Power Providers instead suggest that generators be allowed to include a new risk premium in their Day Ahead offers. Such a risk premium would reflect the hypothetical cost of purchasing a day ahead option to replace the energy sold in real time.10 The result would be to increase prices in the day ahead market. Even according to its proponents, this premium would be difficult to measure.

Witness Shanker notes:

> "I would anticipate that such a premium would be relatively difficult to estimate, as such an option would appear unlikely to conform to most of the assumptions underlying typical options pricing such as the Black-Scholes model."[11]

AEP goes even further, and proposes lifting offer caps on generating units to $2,700 per MWh in the day-ahead market and lifting cost-based offer caps above $1,000 per MWh.[12]

AEP goes further yet, stating that "[r]eserve shortage costs should be allocated to load as shortage reserves benefit load."[13] In other words, it is AEP's opinion that generators collect all of the benefit, but bear none of the potential risk associated with the penalty

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10 Shanker Affidavit at 29.

11 Shanker Affidavit at 29–30

12 AEP at 6

13 AEP at 4

factors included in the June 18th Proposal. The risk, in AEP's opinion, belongs solely to the load.

Rather than address the fundamental flaw in the PJM proposal, the Power Providers has suggested an ad hoc fix. AEP proposes a more radical ad hoc fix.

The MMU proposal would not only resolve the issue raised by Power Providers, it would resolve a number of other issues created by the June 18th Proposal, including that this approach would provide incentives to generation to withhold from the day ahead market in anticipation of scarcity. The potential $1,700 difference in prices between the day ahead and real time markets under the June 18th Proposal, in combination with the PJM offset proposal, would provide capacity owners an incentive to withhold from the Day-Ahead Market so they can receive scarcity prices in the real time market. The offset mechanism included in the June 18th Proposal would permit capacity owners to retain the scarcity price in real time. These incentives run counter to market efficiency. As Witness Shanker notes, "it is not necessarily appropriate to create an incentive that biases all settlements towards real time for purposes of managing this risk."[14] The Amended Proposal, which limits scarcity prices to offer cap levels and incorporates a scarcity pricing true up mechanism, would resolve these issues if implemented.

2. No Evidence Supports the Proposition That $2,700 MWh Prices in the Energy Markets Are Needed to Maintain Reliability

Some parties argue that prices in excess of $1,000 are needed to maintain reliability and to send the "right price signal."[15] However, as stated in the MMU's July 19th filing,

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[14] Shanker Affidavit at 29

[15] DC Energy at 2–3; Power Providers at 31, citing the Shanker Affidavit at 19, 56; PUCO at 6–7.

there is no reason to increase the maximum price in PJM markets in order to implement scarcity pricing. PJM has provided no evidence that increasing the maximum price is required for either the resource adequacy or operational aspects of reliability. PJM has not provided evidence that, given an RPM construct that purchases a surplus of capacity well in excess of what is needed to meet system planning requirements, prices in excess of the $1,000 offer cap are needed to make PJM's system reliable. No party has made the case that the PJM system is currently, or will become, unreliable as a result of current offer caps. No party has provided evidence that energy prices in excess of $1,000 are needed to incent economic demand response. No party has provided evidence that any additional theoretically available demand response, available only at energy prices in excess of $1,000, will make the difference between a reliable or unreliable system.

As an example, in the 2013/2014 BRA, PJM procured capacity that resulted in a 20.2 percent reserve margin, well in excess of the required 15.3 percent reserve margin. PJM procured, over all LDAs, about 6,500 MW in excess of the capacity required to meet its reserve margin which resulted in customers paying about $1.7 billion more than they would have paid to meet the required reserve margin.

C. Existing Incentives Can and Are Promoting Rational Participation of Demand-Side Response in PJM Markets and Efficient Investment in Demand-Side Capability.

3. Energy Prices Up to $1,000 MWh Provide Ample Justification for the Development of Demand Response; No Additional Benefit Has Been Demonstrated from Energy Prices Exceeding $1,000.

A number of parties have suggested that significant demand response could be available at prices above $1,000.[16] These parties ignore the fact that the all in price of electricity during peak demand hours is already well in excess of $1,000 per MWh when the price of capacity is accounted for.

While it is undoubtedly true that customers will use less electricity if the total amount that customers pay for electricity is increased substantially, no party has asserted that scarcity pricing is intended to result in such an increase. In fact, many parties have states that no such wealth transfer will result from scarcity pricing under the June 18th Proposal.[17]

If there is a functional true up and if there are no wealth transfers, the total price of power will not increase as a result of any scarcity pricing proposal. Therefore, the incentives to engage in demand response will not increase. There will simply be a change in the mix of incentives between the capacity market and the energy market. Proponents of the June 18th Proposal because of its alleged impact on incentives for demand side resources have failed to address this issue and failed to explain why energy market incentives are superior to capacity market incentives.

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16 Shanker Affidavit at 21–22; PUCO at 14..

17 Power Providers at 3, 22–23.

But, if the total price of electricity is not going to increase, what is the basis for the assertion that customers will respond to scarcity pricing by using less power?

There continues to be confusion about the purpose of scarcity pricing and the various proponents of scarcity pricing have multiple objectives, not all of which are consistent. Scarcity pricing can serve two functions in wholesale power markets: revenue adequacy and price signals.

Some of the proponents of scarcity pricing are arguing primarily for an increased reliance on the energy market for revenue adequacy. That is a legitimate policy position, but only if the increased reliance on the energy market for revenue is matched by a decreased reliance on the capacity market for revenue. While it is a legitimate position, there has been no support for the claim that increased reliance on the energy market is superior.

The Ohio Public Utility Commission recognizes this tradeoff between revenues in the energy market and the capacity market and the relevance of this tradeoff when comparing energy prices in RTOs:"[i]t is important to note that the Midwest ISO does not have a capacity market that is comparable to that in PJM."[18]

Witness Shanker also recognizes that the capacity market revenues are scarcity revenues.[19]

The proponents of the June 18th Proposal ignore the price signal component of the capacity market. The relatively high price of capacity appropriately reflects the cost of

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[18] PUCO at 14.

[19] Shanker Affidavit at 8.

purchasing power during times when demand is high. The effectiveness of the price signal in the capacity market is demonstrated by the very substantial increases in participation in demand side programs based on the capacity market prices.

Higher energy prices are not required in order to justify investment in smart meters. Capacity prices are currently high enough to do so. Unless the proponents of scarcity pricing are arguing that customers must pay substantially more in total than they are currently paying for capacity plus energy, then the argument is about where the price signal should exist and not about the correct level of market revenue. The current level of market revenue is based on the PJM energy market and on the PJM capacity market, which is explicitly designed to assure adequate revenues to support investment in generation and demand side resources, and explicitly accounts for energy market revenues.

Part of the benefit of scarcity pricing, according to the proponents, would be a reduction in capacity requirements, and thereby a reduction in RPM capacity payments that would otherwise be needed to provide electricity at reasonable prices in all hours of the day.[20] There is no reason to believe that substituting higher energy prices for high capacity prices would result in any reduction in capacity requirements. The proponents also fail to explain why the relatively high price of capacity is not a better, more targeted, price signal to customers to use less capacity than an energy price signal.

The conclusion that energy prices over $1,000 per MWh are part of a reasonable approach to scarcity pricing, and are needed to reduce load during a scarcity event, is based in part on citations to value of lost load studies. Proponents have, for example, defended a

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[20] PUCO at 7

$2,700 price level as being consistent with the value of lost load study results from a number of sources.[21] The proponents argue that these study results indicate that prices in excess of $1,000 are needed to incent demand response in energy markets, and that these study results have been used as the basis of scarcity pricing in other RTO's.

In every case the cited studies state explicitly that the referenced calculated values of lost load refer to total service interruptions (outages), not partial interruptions, and the referenced calculated values of lost load are not relevant to determining the appropriate price to incent demand response.[22] The value of lost load studies do not address or indicate the prices that are needed to incent partial reductions of load, i.e. demand response. Assertions about the reasonableness of prices in excess of $1,000, and the need for prices over $1,000 to incent demand response, are based on a confusion regarding the theoretical concept of the value of lost load and the price that would be needed for customers to make partial load reductions. In other words, the assertion that the value of lost load is consistent with prices needed to incent demand response is incorrect. They are two completely separate values and two completely separate concepts.[23]

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21 PSEG at 31, citing June 18th Filing, Affidavit of Paul M. Sotkiewicz, Ph.D on behalf of PJM Interconnection, L.L.C. at 26–27.

22 PUCO at 15.

23 See Michael J. Sullivan, Ph.D., Matthew Mercurio, Ph.D., Josh Schellenberg, M.A, "Estimated Value of Service Reliability for Electric Utility Customers in the United States," Prepared for the Office of Electric Deliverability and Energy Reliability, United States Department of Energy, June 2009, P. 78. <*http://certs.lbl.gov/pdf/lbnl-2132e.pdf*>.

Equally important, the conclusions of the proponents of higher energy prices based on these studies ignore the price signal from the capacity market. This again evinces a confusion between the revenue adequacy and price signaling functions of scarcity pricing.

PJM customers currently pay all in prices greater than $1,000 per MWh for peak period power when the capacity market prices are accounted for. Any increase in energy prices under the scarcity pricing regime must be reflected in reduced capacity prices because there is no evidence and no assertion by PJM that scarcity pricing is required in order to address revenue adequacy. The current price cap in the energy market is not a barrier to the development of demand response. It is an essential part of the PJM market rules which, among other things, limit market power. The success of PJM's demand response programs to date is evidence of the fact that capacity market prices provide a strong incentive for demand response. Revenue to demand side participants currently results almost entirely from the capacity market.

One goal, according to the proponents of higher energy prices, is that consumers would have greater control over their electric bills. This logic is somewhat circular, as consumers will, if the proposed higher prices are introduced, have much higher bills over which they would now have control. Dramatically higher energy prices are not required in order to provide customers control over their bills or to provide incentives for rational use. State level policies are currently a significant barrier to customers responding to prices. When retail rate designs do not reflect the actual wholesale price of power and customers are prevented from participating in PJM demand side programs, higher wholesale prices are not the solution.

4. The PJM Capacity Market Can and Does Provide Marginal Incentives for Load Response

Witness Shanker states:

"…[U]nder the IMM's proposal, the money collected from load in the form of scarcity/shortage payments during real time events that is not paid to Capacity Resources would be refunded back to load. If I understand the IMM's proposal right, these refunds could be paid within the same billing period as the energy shortage pricing occurs. The upshot is that load would see no or very little impact from the scarcity rents paid to suppliers under RPM, while the real time energy price signals would be eliminated for marginal load."This is not correct. Prices set by economic demand response (marginal load) are not scarcity prices and do not result in scarcity revenues. Scarcity pricing revenues are those revenues directly attributable to the scarcity price adder to the marginal unit LMPs during a reserve shortage. No component of the LMP resulting from marginal economic demand response (location specific and metered) would be scarcity related.

Witness Shanker ignores the incentive effect of capacity prices and confuses the revenue adequacy and price signaling functions of scarcity pricing. Customers are already paying scarcity prices through the capacity market. Witness Shanker argues that no wealth transfer will take place and therefore he must agree that the purpose of scarcity pricing must be to improve price signaling and not to increase total revenues paid to generators. If the capacity market already provides the correct price signal and the purpose is not to transfer wealth, the only logical disposition of the extra revenues paid by load due to scarcity pricing is to refund it to load consistent with the MMU Proposal. There is no good reason adduced by Witness Shanker to permit generation owners to hold customers' money, without interest, for up to seven years.

Power Providers cite cases explaining the Commission's position on the allocation of marginal loss surpluses, that the surplus should not be allocated in proportion to responsibility for losses as this would only mute the locational signal loss prices create.[24] This position has no relevance to the appropriate treatment for scarcity rents paid to capacity resources procured on behalf of load through RPM. No party has a direct entitlement to the loss surplus, as load has paid an accurate locational marginal price including losses. Scarcity rents, on the other hand, appropriately belong to those who have paid for capacity precisely in order to obtain protection from scarcity conditions.

The scarcity pricing revenue true up mechanism included in the Amended Proposal will not negatively affect the marginal incentives of load to respond to price during a scarcity event. Witness Shanker's argument to the contrary depends on the flawed idea that total costs of service are more important than marginal price signals for determining short run marginal consumption. Fundamental economic theory provides that where price is greater than the marginal benefit of consumption, there is an incentive to consume less of a good until the marginal benefit of consumption equals price. This incentive to consume less is the same, at the margin, whether price is one dollar higher than the marginal benefit of consumption or five hundred dollars above the marginal benefit of consumption. Lump sum charges, whether they occur two weeks, one year or seven years after the fact, will not change the marginal incentives to consume at the time the marginal signals are presented. The same is true of marginal production decisions. Lump sum payments, such as after the

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[24] Power Providers at 30, citing, *e.g.*, Black Oak Energy, L.L.C., et al. v. PJM Interconnection, L.L.C., 125 FERC ¶61,042 (2008).

fact offsets, affect income, not marginal choices. Witness Shanker inconsistently asserts that his proposed offset would not have this effect.

The scarcity revenues not distributed to capacity resources would be used to offset scarcity charges that would otherwise have been paid by participants who had already paid for capacity resources through RPM. There would be no true up for scarcity payments to non capacity resources, which means there would be uncertainty, on the part of load, as to the pool of money that would distributed to balancing load positions. The remaining scarcity pricing revenue would be distributed based on the load ratio shares of balancing load. This would prevent double payment of scarcity charges by participants in a particular delivery year.

The MMU proposed scarcity pricing revenue true up mechanism would take the form of a lump sum return of energy based scarcity revenues made through the settlement process, after the scarcity event. The scarcity component of LMP, and scarcity revenues associated with that component, would be calculated, for each participant, after the fact. The MMU true up mechanism would not interfere with incentives, for either generation to perform, or load to reduce at the margin during a scarcity event.

Witness Shanker also criticizes the approach to the revenue offset included in the June 18th Proposal:

> "PJM's approach to coordinating shortage pricing with the E&AS offset fails to acknowledge that capacity resources, such as the proxy reference generation unit, have a must offer obligation in the day-ahead energy market and often are committed there, with no opportunity to earn real time shortage prices. PJM's methodology will result in an over-estimation of the

> energy and ancillary service revenue that the proxy resource can earn and penalize capacity resources that are committed in the day-ahead market."[25]

The Market Monitor agrees that the concern raised with regard to the net revenues assigned to the CONE proxy unit in the Real-Time Market is a flaw in the June 18th Proposal.

The MMU proposes a direct approach to the scarcity pricing revenue true up mechanism that eliminates this issue. The capacity market appropriately compensates capacity resources and provides for reliability and no additional compensation from scarcity pricing is required. Given this goal, the most straightforward way to ensure that such over collection does not occur, and that the forward markets for capacity provide meaningful investment signals, is to ensure that capacity resources do not receive scarcity revenues, including the CONE unit. The settlement process can remove any scarcity pricing revenues from payments to capacity resources, and eliminate the need for a complex, uncertain, after the fact procedure for offsetting scarcity revenues in the capacity market. The net revenues for the CONE unit, under the MMU Proposal, would exclude scarcity revenues consistent with the payment of scarcity revenues to capacity resources.

5. The True Up Mechanism Included in the June 18th Proposal Distorts RPM Price Signals to Emergency Demand Response.

Witness Shanker supports the offset included in the June 18th Proposal, which will distort the current, effective scarcity price signals to Emergency Demand Response in the capacity market. PJM's proposal would allow capacity resources to keep scarcity revenues in the delivery year along with the RPM related scarcity rents for that delivery year. This will increase the three year average net revenues of actual and potential capacity resources

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[25] Shanker Affidavit at 3.

in the delivery year and reduce net ACR based offers of those resources in three subsequent RPM auctions for capacity. This will reduce the clearing price of capacity in three subsequent auctions for capacity to be delivered five, six and seven years after the event. This pass through would also affect the CONE unit used to derive the demand curve in the RPM market for three subsequent auctions, which would also reduce the RPM clearing price for capacity that will be delivered five, six and seven years after the event.

Under PJM's proposal, rather than providing a true up of the administratively determined scarcity pricing revenues in the same delivery year, the scarcity pricing revenues are paid back through impacts on subsequent RPM auctions, five, six and seven years after the event. Under the PJM proposed approach, after a scarcity event, the price for capacity, and the marginal investment signal for new capacity sources, will be reduced. This would not occur under the MMU scarcity pricing revenue true up mechanism. The PJM proposal will therefore work to deter new entry, including entry of new Emergency Demand Response, via its effect on the RPM price signal, and protect incumbents that receive real-time scarcity rents. Reducing the RPM price signal for capacity five, six and seven years into the future after a scarcity event is counter intuitive and counterproductive to the forward price signals needed to incent new entry after a scarcity event.

Witness Shanker has taken issue (at 19–20) with the Market Monitor's arguments that Emergency Demand Response should not be eligible to set price. His argument is based on a misunderstanding of Emergency Demand Response in the RPM market and a failure to distinguish between this capacity related product and non-capacity, economic demand response.

Under RPM, each load serving entity (LSE) in PJM must meet its capacity obligations, determined by its proportional contribution to peak load and the amount of

capacity cleared in the auction, by acquiring capacity resources through the PJM Capacity Market. LSEs are required to purchase enough capacity to meet their forecast peak load. Emergency DR is sold by participants who are willing to reduce their load when called on by PJM in real-time because the capacity serving them is needed by load that has paid for that capacity. Emergency DR sales by load to the RPM market represents a commitment by specific customers to reduce load during emergency conditions, thereby reducing the amount of capacity required to serve them in a given delivery year. Emergency DR represents non-firm load that does not have a right to the capacity that it has chosen not to pay for and is, in the case of an emergency, under an obligation to cut.

Under current market rules Emergency DR cannot set price in the energy market when called. That rule should not be changed.

Emergency DR should not be able to set price in the energy market. Emergency DR is required to reduce load when called on during an emergency. To permit Emergency DR to set price in the energy market at that time would be to invite the potential exercise of market power, depending on the exposure of such load to real-time prices. Emergency DR has no incentive to provide an offer that reflects its actual opportunity costs. There is no efficiency gain that would result from permitting Emergency DR to set price. The message to the Emergency DR is that we require you to reduce load and you can tell us the energy price at which you are willing to reduce. As Emergency DR will be paid, not only the capacity market price, but also the energy market price, such resources have an incentive to increase energy market prices, ceteris parabus.

Economic DR should be able to set price in the energy market at any time because it does not have corresponding compensation and incentive issues. Economic DR has an

incentive to provide an offer price consistent with its actual opportunity costs and Economic DR's participation is entirely voluntary.

The Market Monitor recommends that the current rules determining the eligibility of resources to be marginal in the security constrained optimization be retained. Such rules ensure that the marginal dispatch signals are consistent with marginal resources used to solve the least cost security constrained dispatch optimization problem. Marginal prices correspond to the marginal resource prices at discrete buses on the system needed to meet power balance and system security constraints. This is important feature of security constrained dispatch signals during normal operation and of critical importance during emergency conditions. It is the MMU position that only economic demand response resources with discrete and measurable dispatchability in the form of telemetry, metering and a specific bus location are, and should be, eligible to be marginal, and only in the context of the security constrained dispatch solution.

D. The Amended Proposal and the June 18th Proposal Do Not Differ in Terms of Cooptimization or Reliance on Uplift.

Some commenters mischaracterized the fundamental nature of the Amended Proposal and how it compares to the June 18th Proposal. The misunderstandings include the optimization of dispatch and relative levels of uplift payments. For example, DC Energy asserts (at 2) that the PJM Proposal creates a more accurate optimization that ensures the energy price more closely matches dispatch. DC Energy also asserts (at 2) that there will be reduced uplift and out of merit generation under the PJM proposal. DC Energy does not support either claim and both are incorrect.

Witness Shanker also states (at 17–18) that the Amended Proposal, relative to the June 18th proposal, would result in more unit-based uplift, as no explicit clearing price is established. This assertion is incorrect.

6. The Amended Proposal is a Co-optimization Approach

Contrary to the characterizations of DC Energy and Witness Shanker, both the June 18th and Amended Proposals make use of the co-optimization of reserves and energy to address shortcomings of the current scarcity pricing mechanism. Both proposals use after the fact pricing of reserves and regulation to minimize out of market uplift payments to reserve and regulation assignments in the hour. In addition, the approach in the Amended Proposal can easily accommodate pricing stages to reflect increasing levels of scarcity, should that be determined to be appropriate.

Both the June 18th and the Amended Proposals provide clearly defined real-time reserve requirements and model them as constraints in the security constrained economic dispatch. Both approaches call for the implementation of more flexible and locational scarcity signals via reserve requirements modeled as constraints for defined regions, with administrative reserve scarcity penalty factors, in the security constrained dispatch. Conceptually, incorporating reserve penalty factor curves into the security constrained dispatch internalizes the value of maintaining resources needed for reliability in the centralized dispatch market solution.

In the approach in the June 18th Proposal to reserve requirements as part of the security constrained optimization, when the reserve constraint(s) are binding the penalty factors associated with the constraints are directly reflected as a component of the marginal cost of energy from marginal energy resources. Where penalty factors are sufficient to result in the dispatch of all available reserves, the direct incorporation of fixed penalty factors in

the marginal cost of energy will lead to energy prices well in excess of the offer caps in the energy market. Under the June 18th Proposal, using $850 penalty factors for its two reserves constraints means that up $1,700 could be added to marginal unit bus prices for purposes of determining LMP. This means LMPs at marginal unit buses could be as high as $2,700 during a reserve shortage.

The approach included in the June 18th Proposal is not the only way to structure the mechanics of a reserve constraint in an optimization problem, and it is not the preferred way for scarcity pricing. Instead of adding a fixed penalty factor to the marginal cost of energy, the constraint can be relaxed to allow a market solution and to set the price to the target level. This approach allows the continuation of security constrained economic dispatch but allows the market to provide pricing results that are consistent with offer caps and predefined price caps. This approach is used by PJM in modeling other reliability constraints. This approach is also used to model security constraints or limitations in the optimization engines of PJM, New York ISO, and ISO New England. This approach avoids a number of inconsistencies that PJM's binding constraint approach creates with other aspects of PJM's market design. This approach maintains co-optimized dispatch between reserves and energy.

Under the MMU's proposal, if the reserve requirements could not be met, the reserve constraint would be relaxed and energy prices at the marginal unit buses would be set to a predefined price target. The MMU is recommending a predefined energy price target equal to PJM's current $1,000 per MWh offer cap in both the Day-Ahead and Real-Time Energy Markets. A price target set at $1,000 at the marginal unit buses in the area with a reserve shortage would provide a clear scarcity signal that is consistent with scarcity, consistent with economic dispatch, consistent with locational pricing, consistent with

competitive market outcomes and consistent with PJM's current market design. A $1,000 price target is consistent with the price signal function of scarcity pricing and therefore the operational reliability aspect of reliability.

7. The Amended Proposal, Like the June 18th Proposal, Minimizes Uplift Via an After-the-Hour Single Clearing Price for Reserves and Regulation.

Contrary to the Witness Shanker claim (at 17–18) that the Amended Proposal would result in unit-based uplift, as no explicit clearing price for synchronized reserves is established, both the MMU and PJM propose approaches make use of after the fact single clearing prices of reserves and regulation that provide an appropriate price signal and minimize out of market uplift payments to units providing reserves and regulation in the hour.

As discussed in the MMU's Supporting Statement, under both the PJM and MMU approach, the single hourly clearing price for reserves would be determined after the close of the hour, as the average of the 5 minute (hourly integrated) Tier 2 reserves prices in the hour. This represents a significant change from how Tier 2 reserves are currently priced, with a single market clearing price set prior to the operational hour, based on estimated opportunity costs and offers, with an after the fact unit specific true up for unit specific opportunity costs. Under both the MMU and the PJM proposals, in each five minute interval, the single market clearing price for reserves would be comprised of the marginal unit's synchronized reserve offer price, the cost of energy use, the startup cost (if the unit is not running) and the unit's opportunity cost. Opportunity cost would be calculated based on actual unit specific LMPs and generation schedules from the unit dispatch system. The hourly single clearing price for reserves would be determined after the close of the hour, as the average of the 5 minute (hourly integrated) Tier 2 reserves prices in the hour. All units

cleared in the Synchronized Reserve Markets are paid the higher of the single hourly integrated 5 minute market-clearing price or the unit's synchronized reserve offer plus the unit specific opportunity cost and the cost of energy use incurred. For purposes of compensation, the MW of supply from each resource will be determined on the basis of their hourly integrated (average supplied Tier 2 reserve MW for the hour) cleared MW of supply of Tier 2 reserves. Any unit specific revenue shortfall created by over procurement or hourly integrated prices that were less than the unit specific costs of providing reserves would be made up via uplift.

The MMU and PJM are also aligned in the idea that an after the fact, rather than prior to the hour, determination of regulation pricing would provide a more accurate and transparent price signal for the regulation market. This is explicitly part of the MMU proposal. However, the MMU continues to disagree with PJM's proposal to continue to calculate opportunity costs on the basis of the lower of cost based or price based offers rather than the actual dispatch schedule as the reference and to continue to not net regulation revenues from make whole balancing operating reserve payments. The MMU continues to recommend that the modification to the definition of opportunity cost be reversed and that the elimination of the offset against operating reserve credits be reversed based on the MMU conclusion that these features result in a non-competitive market outcome, and because they are inconsistent with the treatment of the same issues in other PJM markets and inconsistent with basic economic logic.

Both the MMU and the PJM approach will result in a single clearing price for reserves and for regulation that would fully reflect the energy market price, including any periods with a scarcity price, determined after the close of the hour. There is, therefore, no increased uplift under the MMU proposal relative to the PJM proposal.

Ironically, however, due to differences in proposed penalty factors it is possible that more uplift charges would be incurred under the PJM Proposal than under the MMU proposal. The MMU proposal makes use of a penalty factor equal to the price cap on offers, currently $1,000 per MWh. A $1,000 penalty on the reserve target constraints means that the system would be willing to pay as much as a $1,000 in opportunity costs to dispatch for reserves. A $1,000 penalty factor would therefore make the entire supply stack available to the dispatch software to meet energy and reserve needs. With a $1,000 penalty factor, the system will only go short of reserves when there are no reserves available at an opportunity cost less than or equal to $1,000. Penalty factors set at levels less than the price offer cap in the market, like PJM's $850 per MWh penalty factor, provide the opportunity for the system to go short reserves while reserves are still available in the dispatch stack. To the extent that PJM does not allow that to happen, this means that PJM will need to manually dispatch those reserve resources and pay for them out of market via uplift payments.

a. The MMU's Proposed Scarcity Pricing Approach: Price Targets

Witness Shanker, on behalf of the PJM Power Providers asserts (at 17–18) that under the Amended Proposal the actual opportunity costs for units providing reserves and the implied value of reserves declines because prices are capped. Witness Shanker is correct. However, this is the appropriate result under the MMU proposal as opportunity costs are based on the difference between the energy offer of the resource and the price for energy at the resources bus. The energy market is the primary market, not the reserve market. Reserves are the potential to produce energy and provide it to the energy market. Therefore, the margin available in the energy market at a point in time at a particular bus forms the basis of the calculation for the opportunity costs for foregone energy production at that point in time at that location. Whether or not opportunity costs for foregone energy

production go up or down at a point in time is irrelevant so long as the marginal incentives to produce energy (energy margin) or provide reserves (opportunity cost of foregone energy production) is maintained at the solution of the security constrained dispatch. In other words, what is important is that the energy market price properly reflects scarcity and the dispatch instructions that are consistent with least cost security constrained dispatch. The MMU proposal accomplishes this in and out of scarcity conditions.

II. MOTION FOR LEAVE TO ANSWER

The Commission's Rules of Practice and Procedure, 18 CFR § 385.213(a)(2), do not permit answer to answers or protests unless otherwise ordered by the decisional authority. The Commission has made exceptions, however, where an answer clarifies the issues or assists in creating a complete record.[26] In this answer, the Market Monitor provides the Commission with information useful to the Commission's decision-making process and which provides a more complete record. Therefore, this answer should be permitted.

III. CONCLUSION

The Market Monitor respectfully requests that the Commission grant the Market Monitor leave to answer and afford this answer due consideration as it resolves the issues raised in this proceeding.

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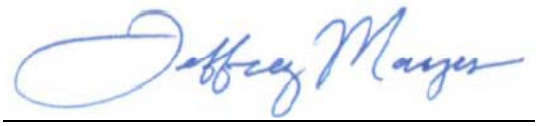
[26] *See, e.g., PJM Interconnection, L.L.C., 119 FERC ¶61,318 at P 36 (2007) (accepted answer to answer that "*provided information that assisted … decision-making process*"); California Independent System Operator Corporation*, 110 FERC ¶61,007 (2005) (answer to answer permitted to assist Commission in decision-making process); *New Power Company v. PJM Interconnection, L.L.C.*, 98 FERC ¶ 61,208 (2002) (answer accepted to provide new factual and legal material to assist the Commission in decision-making process).

Respectfully submitted,



Jeffrey W. Mayes

General Counsel

Monitoring Analytics, LLC
2621 Van Buren Avenue, Suite 160
Valley Forge Corporate Center
Eagleville, Pennsylvania 19403
(610) 271-8053
jeffrey.mayes@monitoringanalytics.com

Joseph E. Bowring

Independent Market Monitor for PJM
President
Monitoring Analytics, LLC
2621 Van Buren Avenue, Suite 160
Valley Forge Corporate Center
Eagleville, Pennsylvania 19403
(610) 271-8051
joseph.bowring@monitoringanalytics.com

Howard J. Haas
Chief Economist
Monitoring Analytics, LLC
2621 Van Buren Avenue, Suite 160
Valley Forge Corporate Center
Eagleville, Pennsylvania 19403
(610) 271-8054
howard.haas@monitoringanalytics.com

Dated: August 26, 2010

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Eagleville, Pennsylvania,
this 26th day of August, 2010.

Jeffrey W. Mayes
General Counsel
Monitoring Analytics, LLC
2621 Van Buren Avenue, Suite 160
Valley Forge Corporate Center
Eagleville, Pennsylvania 19403
(610) 271-8053
jeffrey.mayes@monitoringanalytics.com